SPECTROSCOPY AND DISSOCIATION DYNAMICS OF THE NO_3^+: A T-PEPICO STUDY

KANA TAKEMATSU, *Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA, USA*; GUSTAVO A. GARCIA, *DESIRS beamline, Synchrotron SOLEIL, Gif-sur-Yvette, France*; JOHN F. STANTON, *Department of Chemistry, The University of Texas, Austin, TX, USA*; LAURENT NAHON, *DESIRS Beamline, Synchrotron SOLEIL, Saint Aubin, France*; MITCHIO OKUMURA, *Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA, USA*.

The spectroscopy of the nitrate cation NO_3^+ remains poorly understood. It has a symmetric D_{3h} ground state with an IP = 12.55 eV and is predicted to have four low lying electronic states, three of E symmetry exhibiting the Jahn-Teller Effect. There have been two low resolution experiments - by photoionization spectroscopy and photoelectron spectroscopy, but evidence for the excited states is controversial. We report preliminary studies on the Threshold PhotoElectron-PhotoIon Coincidence (T-PEPICO) spectrum of the radical cation NO_3^+ using the DELICIOUS3 coincidence spectrometer on the DESIRS beamline at the Soleil Synchrotron. Photoelectron and photoion imaging allow us to identify the transitions to the excited states, extract the NO_3^+ signal from the ionization of the dominant background species NO_2 and N_2O_5, and observe vibronic spectra and dissociation dynamics of the electronic excited states.